Helping the Thirsty to Solve Their Water Crisis

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"Unless current trends are reversed, we will have a major water crisis around the planet," says World Bank Vice-President Dr Ismail Serageldin of the silent calamity threatening humanity. Although the Earth has enough water to supply its inhabitants, unequal distribution creates havoc. Many people are victims of devastating floods -- "far more in the 1990s than ever before," according to Professor Hans Schreier, a resource-management specialist at the University of British Columbia.

Meanwhile, others die of thirst. Dr Malin Falkenmark, one of the world's leading scholars on water, predicts in her foreword to the book *Watershed* (IDRC 1994) that by 2025 there will be 3 billion people "living in countries exhibiting water stress or having chronic water scarcity."

Most of these are in the South. In Africa, nine countries were considered water-scarce by the early 1990s. Most others had large regions with acute shortage. In some places where enough water exists underground, users, mainly women, walk for hours each day to get it. In one middle-class subdivision of Metro Manilla in the Philippines, the faucets flow only for a few hours every other day.

Conflict, pollution, and population growth worsen the water-supply situation. Urbanization and economic development require adequate water supplies. They also help deplete water supplies.

The World Seeks a Solution

There is a worldwide search for solutions. But analysts are finding fault with the way many solutions are being implemented. Too often, Northern ideas and technologies are introduced without a clear understanding of the peculiar conditions of the host countries. "It is no good if you go into a completely new environment and have no data and try to do development without first doing research," says Professor Schreier. Even when research is done, the people who know most about the problem, the users, are often not part of the research.

IDRC's approach is to ensure that the research it funds begins with the end users. It seeks to contribute to the development of policies, rules, and institutions that transfer management responsibilities to local communities. IDRC's research program also deals with water conservation. And, while the Centre supports research on water in all three regions of the developing world, it focuses on the area where the need is greatest: Africa and the Middle East.

Since 1977, IDRC has supported more than 100 projects on water in this region alone. But thinking within the Centre on water-resource management has changed over time. Projects approved during the 1970s and the early 1980s dealt mainly with health and sanitation and with the development of technologies to make water pure and accessible.

A sample of the projects supported includes rainwater catchment tanks in the Philippines, a portable water-testing kit in Malaysia, solar-powered water purification in Lebanon, and rice husk water filters in India. A PVC (polyvinyl chloride) handpump developed by the University of Waterloo with a 1978 grant from IDRC is arguably the safest, least expensive way to provide safe

drinking water in developing countries today. Thanks to follow-on funding by CIDA, it is now mass produced and has been adapted for use in over a dozen countries in Africa, Asia, and Latin America.

By the middle and late 1980s, the Centre was supporting research on a wider range of related issues, including water harvesting. A novel technology, developed by scientists from the University of Chile and Environment Canada, harnesses fog to provide clean water to a previously thirsty village in northern Chile. This project, financed jointly by IDRC and the Canadian Embassy in Chile, has made possible a fully functioning local water supply for the people of Chungungo, who previously trucked in small quantities of expensive water from 40 kilometres away.

According to principal researcher Pilar Cereceda, this technology can be useful in other arid places where clouds can be intercepted by mountains. These include parts of Africa, India, the Middle East, and Latin America. Professor Cereceda adds that the project taught her how "the participation of the community in learning to use water wisely and avoid needless waste is obviously very important."

Most water projects backed by IDRC today take an integrated approach to water management. Some deal with the link between soils, crops, and water. Some combine studies on rainwater harvesting with ways to reduce demand. Demand management, a new concept in water policies, mirrors the steps taken by countries like Canada to deal with the energy crisis in the 1970s. Like imported fuel, demand for water can be reduced by eliminating waste and making more efficient use of the resource. The lesson learned is that simply increasing supply without addressing demand is ineffective.

IDRC has pioneered the introduction of this approach in studies on water. In the capital city of the Philippines, Manila, water distribution and household demand are being studied under a project with the Philippine Institute for Development Studies, an agency of the country's planning body. A hoped-for outcome is a fair system to pay for water used.

Researchers on demand management are finding that they need to be sensitive to the fact that many regard free water supply as a right enshrined in their holy books. A network is planned to help both researchers and policymakers in this field.

The need for demand management was highlighted during a pan-African workshop on water management organized by the Centre in 1994. The workshop, attended by 41 specialists from Africa and the Middle East, focused on target users, community needs, and priorities to optimize local water-resource management, technology acquisition, and efficient and environmentally friendly regulations for the use of water resources.

The workshop also paid special attention to the important role played by women in obtaining pure water, the need to involve them in the research process, and the value of indigenous water-management knowledge in general. The exercise strengthened IDRC's understanding of water research needs and capacity on the continent and strengthened its links with other donors doing work on this subject.

Understanding the end-user approach to water management is also the focus of three pilot studies being coordinated by the Montreal-based International Secretariat for Water. All promote the idea that traditional approaches to water management retain many advantages over more "modern," imported systems. In one of the studies, the approach by Tanzanian pastoralists to management of water and of the ecology will be studied and documented by an NGO comprising the pastoralists themselves.

Similarly, Ugandan research groups will play a major role in research on the fairest and most effective way to avert the pollution crisis facing Lake Victoria. This lake, the second largest freshwater lake in the world, can have an impact on the lives of more than 30 million people.

Bridge over Troubled Waters

IDRC has supported a number of research initiatives to deal with water as a source of conflict in places where the potential exists and in the Middle East, where water has been the key natural-resource issue for at least 3 000 years. Dr David Brooks, an IDRC chief scientist and an expert in this field, writes that "no other region of the world embraces such a large area, with so many people striving so hard for economic growth on the basis of so little water."

IDRC was part of the Canadian representation on the team discussing water issues during the Middle East peace talks. The talks brought together Israeli and Palestinian researchers who, until then, did not know, and were unlikely to speak to, one another. The two teams of researchers are now seeking peaceful and effective means to manage jointly the Mountain Aquifer, the region's largest source of quality drinking water.

The researchers have identified the problems and defined alternative management options. A second phase of the research is seeking ways to select among the options. Researchers will also try to define who -- Israel or Palestine and which group within each country -- would win or lose under each option.

This kind of project enables Canada to contribute to peace and security in a volatile region. IDRC water projects also showcase Canada's considerable expertise.

Hans Schreier says some of the data he collects in his IDRC-funded research in Asia and the Middle East could be important to Canada. The kinds of storms he is studying in the Himalayas could provide an indication of what Canada can expect if it experiences significant climate change. He regards IDRC as "quite unique" in its use of research to seek a solution to what he calls "the crisis of the year 2000."